

difficulties at the time of birth. There can be no doubt that rickety conditions of town children, and the sedentary or persistent standing occupations of young girls in shops, &c., will tend to distort the pelvis, and thus act injuriously on the race by reducing both the physical and mental standard of their children. With regard to the progressive degeneracy of our population referred to by Mr. Hyde Clarke, I think something more definite than personal recollections is required to prove it. We all know how we are daily compelled to recognise the fallacy of our earlier recollection. If we go down to a country town or village, which we knew well a few years ago, we find the houses smaller, the streets narrower, and the whole place shrunken in its proportions, and it would be the same with the inhabitants also if they had stood still as the inanimate objects have done around them. There can be no doubt that our large towns are, as it were, the graves of the physique of our race, but it is not because town life is so very injurious, but because the feeble, the halt, and the blind gravitate towards them in search of work suitable to their capacities. So far from admitting the degeneracy of our population as a whole, I am satisfied that it is improving in physique, and is better now than at any former period of our history. The skill and care which saves the weak child to the community, gives health and strength to the strong, and the physique of the whole is raised to a higher level. It is difficult to find direct evidence of this improvement, but some statistics of the stature and weight of factory children (where we might expect degeneracy if anywhere), recorded in 1833 and in 1873, show that the children of the latter period were a whole year in advance of the former—children of ten or eleven years of age in 1873 being as tall and heavy as those of eleven and twelve fifty years previously.

CHARLES ROBERTS

Bolton Row, Mayfair, November 11

IN a letter on the above subject in NATURE, vol. xxv. p. 8, Dr. W. B. Kesteven asks for information or opinions on the statement that English heads have diminished in size during the last twenty-five or thirty years. My own opinion is that this is really the case. On the cause of this diminution I am not at present prepared to give a decided opinion. In the course of some investigations on heredity, commenced many years ago, I discovered that in some instances the average size of the heads of the sons and daughters was less than the average of those of the two parents. In each case the former had arrived at maturity before the comparison was made, and in every instance the children had had the advantage of a much larger amount of intellectual training than the parents had enjoyed. This discovery, so contrary to all the generally accepted opinions, surprised me considerably, and caused me to make inquiries from one of the leading hat-makers in this city as to what had been his experience in the increase or diminution in the sizes of hats sold. The facts furnished to me fully confirm the statements made in Dr. Kesteven's letter, and as the hat manufacturer to whom I refer has been more than forty-five years in the business he has had ample opportunity for collecting trustworthy information. From an article subsequently published by him in a trade journal (*Umbrella and Portmanteau Trades Review*, July, 1880) I take the following: "There is another feature in connection with heads which is singular in this district, and that is the decrease in sizes. It used to be considered sufficient to make one to each dozen; we now make, on an average, three or four of these sizes, which we are now obliged to keep in stock to meet our requirements. I allude to such sizes as 6½ and 6¾, which formerly were only necessary in boys' hats. This decrease in the size of heads has been going on for the last twenty-five years to my certain knowledge." In the letter appended to Dr. Kesteven's letter Prof. Flower asks the important question, "Does it [the statement] refer to any particular class of men, and does it refer to the same class of men?" In answer to this I have to say that the classes to which the figures in my quotation refer are, and have always been, much the same, namely, the upper and middle classes; and the individuals included in these two classes have had as much variety in their occupations as any large city, such as Manchester, can furnish. Another important question is also asked by Prof. Flower, namely, "May it (the decrease in the size of hat) not arise from some change of fashion, . . . such as hats being worn more on the top of the head than formerly." In some few instances this might possibly account for the difference, but in the majority of cases, and especially in those belonging to the dolichocephalic class of head, it will be found that it requires quite as large a size of hat when worn more on the back part

of the head as it does when worn on the top. The data already collected are probably not sufficient to base any settled opinion upon; but if more extended investigation should confirm the statements made above, it will then be a matter of some importance to us to endeavour to discover the cause of this diminution in the size of English heads. It will also be interesting to know if any such phenomenon has occurred in any other country.

Old Trafford, Manchester

CHARLES H. BLACKLEY

SURELY Mr. Hyde Clarke's arguments in favour of the hatters' statements are somewhat defective. Even if the survival of human weaklings be granted, it by no means follows that a being with a weakly body must needs have a small head. Indeed the exact converse is usually accepted; for big-chested athletes are generally supposed to be the men in possession of the smaller heads, and persons of weakly constitution the possessors of the larger heads. A weakly condition of body and health is often associated with great mental activity. Besides, at birth, the conditions, if favourable for the survival of weaklings, are surely equally favourable for the strong and well-made; under ordinary circumstances then these latter individuals should show an increase in the size of the head. It cannot be imagined that the weaklings are surviving at the expense of the strong and hearty, such a case would be, as some one has said, a survival of the unfittest. It would be interesting if Mr. Hyde Clarke would tell us something more about the "old standard" in ears, when he observed ears begin to fall below this old standard, and how the old standard in ears is to be recognised. My business as an artist has caused me to particularly notice heads and faces for many years past, and from ten to thirty portraits (old and new) pass through my hands every week. My opinion, founded on this experience, entirely agrees with the statements made by some of the speakers at the meeting of the Anthropological Institute mentioned by Mr. Clarke. The alleged diminution in size of men's heads is I think due to a misinterpretation on the part of the hatters of the fact that the hair is worn much shorter now than formerly, and the hat is now worn more on the crown of the head than in the past generation. The brim of the hat brought close down over the brows and the long hair in men is a very marked feature in old portraits.

W. G. SMITH

125, Grosvenor Road, Highbury, N.

I SHALL not enter into the question of the relative sizes of the heads of our generation and of that of our fathers or grandfathers, beyond stating my general agreement with the explanation suggested by Prof. Flower, viz. that we carry our hats perched on the top of our heads instead of bringing them down as they did over occiput and ears, and that many of us, myself included, wear what hair we have so short that brushes and combs become superfluities. But I must express my surprise at so eminent a reasoner and statistician as Dr. Hyde Clark giving his support to a notion that to every medical statistic seems a transparent fallacy—that a reduced infant mortality implies a deterioration of the race. If the deaths of children were owing solely to exposure to the elements, there might be a survival of the fittest, and such was the case among the Highlanders in former days, as it is perhaps still among Red Indians and the like; but we know that disease does not strike or weed out the feeble ones, or the people of Liverpool and Manchester, among whom 60 to 70 per cent. die before attaining their fifth year, ought to be a more stalwart race than the Scandinavians, who lose only about 16. No! infant mortality in civilised (?) and urban populations is due to two great causes, zymotic diseases and parental neglect, including insanitary surroundings. Now scarlatina, diphtheria, &c., do not show any preference, but cut off healthy and weakly alike; and improper food, foul air, overcrowding, bad drainage, though they may kill the feeble outright, tend to deteriorate the survivors; the weak die, the strong are made weak; those who do not die of scrofula, or diarrhoea, or rickets in infancy grow up puny or consumptive—"Mox daturus progeniem vitiosorem." I maintain that just as each death registered represses two whole years of sickness, so each infant's life saved implies two who would have been feeble rendered healthy and valuable members of society. The opposite view would strike at the root of all sanitary reform.

76, Marquess Road, N.

EDWARD F. WILLOUGHBY

MCNOS ISLAND, TRINIDAD

THE following extract from the log of the R.Y.S. *Northumbria* has been sent us for publication by Dr. G. H. Kingsley; it is dated February 28, 1881:—

"An almost perfectly land-locked harbour is formed by Monos itself and the neighbouring islands; on the Monos side indented with little bays, each one with its pretty white cottage, sparkling in the shade of clumps of coco-palms, with a silk cotton tree here and there, the latter looking as if they were trying to grow themselves into boards to save the sawyer trouble. The general tone of the vegetation just now is rather dull and New Zealandish, but the rocks along shore are covered with an infinity of bright flowers and shrubs, slender-shaped aloes bearing golden blossoms on their candelabra-like branchlets; wild pines with pink bracts and bright yellow petals, with sweet-scented orchids dangling anywhere and everywhere.

"February 29.—From Morrison's Bay in the hot level morning sun (most punishing and dangerous of all are the point-blank darts of Apollo), fairly into the Bocca Mono, upon the mysterious 'Guacharo,' which is here called 'watchelo.' The only cave containing them accessible at present was a low-browed one at the base of the cliff, into which an occasional roller sweeps ever and again in a most unpleasant manner, lighting up the black interior with flashes of foam, which augurs badly for the safety of our delicate pine gig. On this it was thought better to fall back on native talent, fishing close by in an island boat formed as to its lower parts of a 'dug-out' from the solid tree, and as to its upper of two planks nailed on to heighten the free board. A tituppy, ticklish kind of a craft to the inexperienced, crank in the extreme, but with a huge reputation for seaworthiness when properly handled. The negro proprietor had his head tied up in a dirty clout, in consequence of a difference of opinion with another 'cullud gebblum,' who had revenged his broken nose by literally 'mashing him jaw with rock-stone.' Though mumbly in speech, he was civil and accommodating, and taking Morrison and L. on board his dancing walnut-shell, he backed into the cave on the back of an accommodating wave. The cave was not deep enough to prevent the proceedings of those within being seen and heard by those without, and soon dismal yells, followed by smoky and smothered explosions, showed that hints were being given to the 'watchelo' to show themselves to their visitors. Another shot, followed by a jubilant shout, told us that one at least had shown himself once too often, and the party emerged blinking into the sunlight with their prey. The second entry was like the first: the interior commonplace and cavey, the interesting thing, of course, the 'watchelos,' fluttering about and perching on the more prominent projections. It is a remarkably handsome, upstanding, and even graceful bird, long-tailed, brown-feathered, with white diamond markings, just the colour of the quartz crystals in the reddish-brown rock on which it stood—a capital instance of preservative colouring, or the effect of surrounding colour. Altogether the 'watchelo' looks very much like a cross between the long-tailed cuckoo and a fair sized hawk; though the thighs are quite bare of feathers. We have been told all that is known about these queer fruit-eating Fissirostres—still there is much that is not known; for example, where they spend the night in collecting the fruit which contains the hard bristly seeds found in the stomachs of the adults and the young, and which, developing their nestlings into mere masses of fat, render them, as charming Mrs. Morrison says, '*si bon à manger.*' Mr. Morrison says that they feed on the '*Tierra firma*,' or mainland, but even he knoweth not on what.

"Having finished thus successfully our chase of the frugivorous goatsucker, we turned our attention and boat's head to another cave on the other side of the Bocca, in which dwelt an equally eccentric and out-of-the-way animal, the 'piscivorous bat.' These queer creatures, possibly in imitation of their opposite neighbours, have relinquished their supposed natural food, and

have betaken themselves to catching fish at night in a manner which is not very clearly made out. Either they scoop them off the surface of the water by means of the membrane extended between their hind legs, or they catch them with their exceedingly sharp and curiously arranged claws. They dwell in a cave much more lowly and commonplace than their neighbours the 'watchelos,' and as they declined to answer the invitation sent to them by a shot into its interior, some of the party jumped overboard, mid-leg into the water, and proceeded with shouts and yells to drive them out into the glaring sunlight. Out they came in scores, these odd members of the Fish-mongers' Company, flickering and fluttering in the slanting morning rays that shone through their diaphanous wing membranes and almost translucent chestnut-coloured bodies. Gnomes, Fays, Fanfullas, Flibbertigibbets, any queer, fantastic thing you have ever fancied or dreamt about, were not half so fantastic as these! Strange, and not without weird beauty to the eye. But to the nose! Fairylike in form and fluttering as they might be, the simple truth is they stank like Fitchets! 'Ruddy Miss Prue with golden hair,' in her wildest rompings, was nothing to them, and the scent produced in the hardest and strongest 'illiad' mariner a fervent desire to heave up his immortal soul. Possibly in revenge for this, the hardy one went for them with a boat-stretcher with such enthusiasm that shortly a hollow sound was heard, and another mariner, no longer enthusiastic, was observed hanging his head over the gunwale of the boat, with the blood trickling down his innocent nose from as pretty a scalp-wound as ever delighted a savage. However, but little harm was done, and we collected our wounded and slain, many of which had meanwhile sunk to the bottom, and wended our way back to the *Northumbria*.

"We visited the Bocca again in a late twilight, if there be such between the tropics, to study the mode of fishing of these most mysterious bats; but it was too dark to make anything out with certainty, though the queer scooping 'swish' supposed to be produced by their skimming the surface of the water with their posterior membranes, was distinct enough. What was even more distinct was, not to put too fine a point upon it, the stink; even right out in the open Bocca and at some distance from the cave, we were aware of the neighbourhood of individuals by the heavy rank smell floated towards us in the hot evening breeze.

"It is not the slightest use the 'parlour naturalists,' who study birds in glass cases and fishes in bottles, saying that this bat, from its 'dentition,' 'tripetition,' or any other of its 'itions,' must be frugivorous or insectivorous. The simple fact is that it is neither. When you find an individual of showy exterior, but slightly imperfect manners, with his pockets full of watches with the swivels broken off, you are justified in classing him, without the slightest reference to his 'dentition,' as a specimen of the 'swell mob—Homo watch-priggious'; and I maintain that when you find the stomach of a bat—the only pocket he possesses, not being a marsupial—stuffed with the scales and bones of fishes, you are fairly entitled to put him down as 'ichthyophagous' by all the rules of common sense. Our queer friend the 'watchelo,' with his deeply-cleft bill and outstanding bristles, *ought* to be a moth-catching goatsucker; but unless he swallows seeds for ballast he certainly lives on the fruits which contained them. It is the old story: directly we find what we call 'Nature' doing a thing perfectly well in one way, we immediately find her doing it equally well in another and directly opposite one. If she finds a bird with a bill perfectly formed for the catching of moths, she at once shows that it will do equally well for picking fruits off the bushes on dark nights; and if a bat can take the smallest midge in the twilight with unerring accuracy, she turns him without alteration into as good a fisher as the very otter himself.

"I am sorry to say that the 'fish booming and drumming,' described by Charles Kingsley, was not to be heard. Either we were there at the wrong season, or the fish had been driven away by the use of dynamite. From all I heard, the sound was identical with that produced by the drum-fish so common in the Indian river of Hinda."

ROBERT MALLET, F.R.S.

THIS eminent engineer, whose researches on earthquakes are so well known to scientific men, died on the 5th inst. at the age of seventy-one. During his very active career he accomplished a vast amount of work, of which his "Earthquake Catalogue" and other published books and memoirs form the best monument.

Robert Mallet was born in Dublin on June 3, 1810. He was descended from the representative of a Devonshire family who had settled in Ireland, his father being the owner and manager of an engineer's factory. During childhood Robert Mallet appeared to be of weakly constitution, but he grew up to be a man with great powers of endurance. His taste for science was exhibited at a very early period, and before he had reached the age of twelve years he had established a laboratory in his father's house, where he delighted in performing chemical experiments. After being taught in a private school in Dublin, and making a tour on the Continent, he entered as a student at Trinity College, Dublin, and in 1830 completed his studies there by taking his M.A. degree. In 1831 he made an extended tour on the Continent, and, upon his return, married, and entered into partnership with his father. From this time forth he was busily engaged in various engineering projects both in the capital and in various parts of Ireland. Private study and research were, however, by no means neglected during these busy times, and in the very year of his commencing business we find him publishing his first paper on the motion of glaciers. He had before this time been elected a member of the Royal Irish Academy. In 1839 Mallet was elected a member of the Institute of Civil Engineers, and in the same year made his important invention of "buckled plates," an invention which was not patented till 1852, the patent being prolonged in 1866. It was in 1846 that Mallet published his first paper on Earthquake Phenomena; this memoir, which appeared in the *Philosophical Magazine*, gave a simple explanation of the supposed "vorticoose movements" during earthquakes, and two years later a paper in the *Transactions* of the Royal Irish Academy contained a full exposition of his views on the wave-movement in earthquakes, with which every one is now familiar. During subsequent years Mallet published in the British Association Reports his papers, which aimed at drawing up a complete catalogue of earthquakes, with various contributions to seismology and seismometry. In 1857 occurred the great earthquake in the Neapolitan territory, and in the following year Mr. Mallet was commissioned by the Royal Society to proceed to the district and to study its effects.

The results of his observations were published in two volumes in 1862. In 1858 the Earthquake Catalogue was completed by Robert Mallet with the aid of his son, now Prof. J. W. Mallet of Virginia. About this time we find Mallet engaged in experiments upon artillery, and in calling attention to a new gun which he had invented, but which never seems to have been of much practical utility. In 1872 Mallet laid before the Royal Society a memoir, to which he had evidently, during many years, devoted much time and labour; it was entitled "On Volcanic Energy, an Attempt to Develop its True Nature and Cosmical Relations."

Whatever differences of opinion may be entertained as to the truth of the theory which is there sought to be

established, there can be none whatever as to the value of the experiments which constitute its basis, or of the important influence which it has exercised upon geological thought and speculation. This important memoir, which was published in the *Philosophical Transactions*, has been translated into German by Prof. von Lasaulx, who has added a valuable commentary to it.

During the later years of his life, Mallet, who had removed from Dublin to London, was afflicted with almost total blindness, but he nevertheless continued to make occasional contributions to his favourite branches of science. Altogether he was the author of more than seventy memoirs, besides separately published works. Mr. Mallet was elected a Fellow of the Royal Society in 1854 and of the Geological Society in 1859; in 1877 he was awarded the Wollaston medal of the latter society.

THE LAND OF THE MIDNIGHT SUN¹

UNDER the above striking title we have an account of the Peninsula of Scandinavia and of the life of its people, based on a series of journeys made at different times, from 1871 to 1878, by Mr. Paul Du Chaillu. It is pleasant to meet with an author, already so well known for his travels in Equatorial Africa on new ground, and to find that his journeyings on virgin soil and among wild and savage races have not unfitted him for the study of the physical characteristics of an old country, and of the manners and customs of its inhabitants. The reader of these two handsome and well-illustrated volumes may form some notion of the extent of ground traversed during a five-years' sojourn, from the tracings of the author's routes on the map appended to the first volume. Not only was the country travelled over from north to south and from east to west, but the coast-line from Haparanda to the extreme north-eastern point of Norway, a distance of 3200 miles, was observed, the greater part of it both in winter and in summer, and over 3000 miles of fjords were sailed along. The illustrations are most frequently from photographs, but those representing Lapland winter scenes are the work of a Swedish artist.

A great many pages of this work, while pleasant reading, will not afford much new information to the reader who may have already travelled in Sweden or Norway. The route from London to Göteborg, Stockholm with its beautiful suburbs, Upsala, Christiania, Bergen, the Dovrefeld, the splendid scenes of the Romsdal; these and a few more well-known routes and places are all within the compass of an ordinary summer's tour; but Du Chaillu has told of these all in an attractive and appreciative manner, and he treats of many such only by the way as he journeys on to places seldom visited even by the sportsman in pursuit of game. He gives a good deal of interesting information about the Laplanders. The Lapps are described as kind-hearted, dirty people. Their life during summer is a very hard one. They have to follow their reindeer day and night, lest the herds should wander. Coffee was their principal drink, mixed with the thick reindeer's milk. They were a fair-haired and fair-skinned people, with blue eyes, prominent cheek-bones, and the nose *retroussé*. The men were from four feet five to five feet and one-quarter inch in height, and three women measured four feet and one-quarter, four feet and three-quarters, and four feet six and three-quarters of an inch in height respectively. It was at the Lapp village of Jockmock that Prof. Baron von Düben, so well known and appreciated in this country for his writings, was met with. He was engaged in the study of the Lapps when Du Chaillu, fatigued and hungry, found himself entering the station. Longing to see a human

¹ "The Land of the Midnight Sun: Summer and Winter Journeys through Sweden, Norway, Lapland, and Northern Finland. With Descriptions of the Inner Life of the People, their Manners and Customs, their Primitive Antiquities, &c." By Paul B. Du Chaillu. In two volumes, with map and 235 illustrations. (London: John Murray, 1881.)